

REMARKS

In the light of the interview on September 27, 2010, a supplemental amendment has been filed herewith.

In the amendment, claim 48 has been further amended to clarify the features of the invention. Also, new abstract of the disclosure has been filed.

In the interview, an article (Electrochemical Reactions in a DMFC under Open-Circuit by Q. Ye et al., electronically available on November 29, 2004) newly found by the applicant has been presented, wherein the article discloses the essential part of the invention. PTO-1449 is filed herewith. Although the article was available on November 29, 2004, the present application has priorities of March 31, 2004 and November 26, 2004.

Also, submitted herewith is a copy of the article of Nihon Keizai Shimbun (News paper) published on November 8, 2005 in Japan and its translation wherein it is reported that GS Yuasa Corporation found a new hydrogen supply method.

Please consider the amendments and the facts surrounding the invention.

Please charge \$180.00 for filing PTO-1449 to Deposit Account No.11-0219. If any other fee is required, please charge to Deposit Account No. 11-0219.

Respectfully Submitted,

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Nihon Keizai Shimbun (November 8, 2005)

Hydrogen Production Method with Low Reaction Temperature

GS Yuasa Corporation

GS Yuasa Corporation announced on November 7 the discovery of a new hydrogen production method. If a fuel cell, which uses a reaction of methanol and air, is generated in a state wherein the supply of air is controlled to approximately one-tenth of the normal supply of air, it was confirmed that hydrogen was generated in an electrode.

The corporation is going to develop a compact hydrogen production device, which will be built into a notebook computer and the like, by applying the above-mentioned phenomenon in approximately two years from now.

The new hydrogen production method is characterized by a reaction temperature as low as 30 to 90 degrees Celsius, so that the device can be easily downsized compared to a conventional method which reacts with methane or water vapor at 150 degrees or above. With the methanol fuel cell with an electrode area of approximately 60 square centimeters, a maximum of eight cubic centimeters of hydrogen was generated per minute at the reaction temperature of 50 degrees.

The corporation is planning to combine a new hydrogen production device and a fuel cell using hydrogen as the fuel, and put that into practical use as the power source for mobile devices. The corporation aims at downsizing the overall power source starting such as a research for the electrode enhancing the hydrogen production efficiency with material manufacturers.

シーエス・ユアサニー
ボン・ジョンは7日、水
素の新しい製造法を発見
したと発表した。メタノ
ールと空気の反応を利用して
する燃料電池や、空気の
供給量を通常の十分の一
程度に抑えた状態で発電
させることで、水素が発
生する」と説明した。
同社はこれまで、メタノ
ール・ベンジンははじめ組
み込む小型の水素製造装置

反応温度低い
水素製造法

新たな水素製造法は反
応温度が七十度三十九十
度といいの特徴で、メ
タンや水蒸気を四五十五度
以上で反応させた従来法
に比べ、装置を小型化しや
すい。電極面積が約六十
平方㍍のメタノール型燃

料電池を使い、反応温

度五十度で一分間に最大
八立方㍍の水素を発生し
た。

同社は新たな水素製造
装置で、水素を燃料とす
る燃料電池を組み合わせ
て携帯機器の電源として
実用化する計画。素材メ
タノールと水素の製造効率
を高める電極の研究など
を始め、電源全体の小型
化を目指す。